

Application S/N: 10/699,779
Docket No. P03344-USDIV
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REMARKS

Entry of this Amendment is proper under 37 CFR §1.116, since no new claims or issues are raised and it is believed that the claim amendments provide wording for allowance, as based on the Examiner's comments in the Office Action dated April 11, 2005.

It is noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 5-20 and 27-35 are all of the claims pending in the present Application. Claims 12, 15-20, 30, and 34 are allowed. Applicant gratefully acknowledges the Examiner's indication that claim 35 would be allowable if rewritten in independent format. However, Applicant believes that the clarification to independent claim 5 has overcome the rejection based on Wu and, accordingly declines to rewrite claim 35 in independent format at this time.

The Examiner objects to claim 6 as improperly matching the singular subject with the plural verb. Applicant believes that the above claim amendment to this claim properly addresses the Examiner's concern and respectfully requests that the Examiner reconsider and withdraw this objection.

Claims 5 and 6 stand rejected under 35 USC §102(b) as anticipated by JP 11-330904 to Wu, and claim 7 stands rejected under 35 USC §103(a) as unpatentable over Wu. Claims 8-11, 13, 14, 27-29, and 31-33 stand rejected under 35 USC §102(b) as anticipated by US Patent 5,905,418 to Ehara et al.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

As described and claimed, for example, by claim 5, the present invention is directed to an SAW device in which an SAW element is mounted. The SAW element includes a ladder-

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type circuit which has a serial arm formed between input and output terminals and which has a plurality of parallel arms formed between the serial arm and a reference potential terminal. The SAW device includes a plurality of first SAW resonators which are located in the serial arm and each of which has a predetermined resonant frequency and second SAW resonators which are located in the plurality of parallel arms, respectively, and each of which has an anti-resonant frequency corresponding with the predetermined resonant frequency of each first SAW resonator. A capacitance means, which has a predetermined electrostatic capacity, is interconnected between the output node of a resonator located in a parallel arm positioned in a nearest position of said input terminal and the output node of a resonator located in a parallel arm positioned in a nearest position of said output terminal.

This aspect of the present invention provides one mechanism in which attenuation at frequencies outside the pass-band is increased without making an inductive component small. Moreover, since it does not depend upon a component due to the acoustic resonance phenomenon, the insertion loss is not increased.

In an exemplary second embodiment, at least partially described by claim 8, the present invention is also directed to an SAW element including a first wiring portion formed between input and output terminals, a plurality of second wiring portions formed between the first wiring portion and a reference potential terminal, and at least two single unit elements.

Each of the single unit elements includes a first SAW resonator which is located in the first wiring portion and which has a predetermined resonant frequency and a predetermined anti-resonant frequency, a second SAW resonator which is connected to the second wiring portion of the side of the input terminal of the first SAW resonator and which has an anti-resonant frequency corresponding with the predetermined resonant frequency of the first SAW resonator, a third SAW resonator which is connected to the second wiring portion of

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the side of the output terminal of the first SAW resonator and which has an anti-resonant frequency corresponding with the predetermined resonant frequency of the first SAW resonator, a first connection point for connecting the second SAW resonator of the side of the reference potential terminal and the third SAW resonator of the side of the reference potential terminal with each other, and a first inductance element which is located between the first connection point and the reference potential terminal.

Each single unit element provides a substantially identical frequency response comprising a bandpass filter having an attenuating pole f_s caused by the resonant frequency of the first SAW resonator, an attenuating pole f_p caused by the resonant frequency of the second SAW resonator and the third SAW resonator, and attenuating poles f_1 and f_2 caused by an electrostatic capacity of the first SAW resonator, an electrostatic capacity of the second SAW resonator, and an inductance of the first inductance element.

In this aspect of the present invention, each single unit element provides attenuation poles f_1 and f_2 , and using two or more such single unit elements deepens these two attenuation poles. The resonant circuit Q results from the ohmic resistance loss of the SAW resonator, the acoustic loss of the SAW resonator, and the Q of the inductor 24.

If substantially identical single unit elements are connected together, the effect of the poles accumulate. Consequently, this definition of the present invention can be described as a filter formed by a plurality of single resonant blocks. The prior art of record fails to teach or suggest this modular approach defined by claim 8.

II. THE PRIOR ART REJECTIONS

The Examiner alleges that JP 11-330904 to Wu anticipates claims 5 and 6 and renders obvious claim 7 and that US Patent 5,905,418 to Ehara anticipates claims 8-11, 13, 14, 27-29,

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and 31-33. Applicant respectfully disagrees.

First, relative to the rejection based on Wu for claims 5-7, Applicant believes that the claim amendment above to claim 5 eliminates the possibility of a broad interpretation for the terminology upon which the rejection currently of record is based.

In the present invention, the capacitance means 24 exemplarily shown in Figure 4 converts the serial inductance L_p into parallel, so that it can operate the attenuation pole frequencies, which is conventionally decided by the parallel arm side SAW resonator 21 and the connected inductance L and L_p. Wu make no suggestion of such capacitance.

Hence, turning to the clear language of the claims, in Wu there is no teaching or suggestion of: "... capacitance means which has a predetermined electrostatic capacity and which is interconnected between an output node of a resonator located in a parallel arm positioned in a nearest position of said input terminal and an output node of a resonator located in a parallel arm positioned in a nearest position of said output terminal", as required by claim 5.

Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw this rejection based on Wu.

Second, relative to the rejection based on Ehara, Applicant submits that the plain meaning of the claim language of revised claim 8 precludes the interpretation in the rejection currently.

A key aspect of the invention described in claim 8 is the improvement of the inductance Q. This technical aspect is not described in Ehara, and Applicant respectfully requests that the Examiner reconsider and withdraw this rejection based on Wu.

Hence, turning to the clear language of the claims, there is no teaching or suggestion of "...wherein each said single unit element provides an substantially identical frequency

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response comprising a bandpass filter having: an attenuating pole fs caused by said resonant frequency of said first SAW resonator; an attenuating pole fp caused by said resonant frequency of said second SAW resonator and said third SAW resonator; and attenuating poles f1 and f2 caused by an electrostatic capacity of said first SAW resonator, an electrostatic capacity of said second SAW resonator, and an inductance of said first inductance element."

For the reasons stated above, the claimed invention is fully patentable over the cited references.

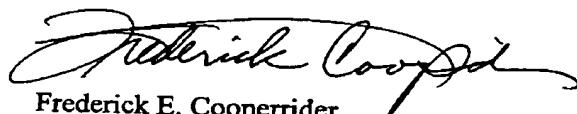
III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 5-20 and 27-35, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully submitted,



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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner B. Summons, Group Art Unit 2817 at fax number (703) 872-9306 this 11th day of July, 2005.


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